

An Empirical Study of Content Understanding in Conversational Question Answering

Ting-Rui Chiang Hao-Tong Ye Yun-Nung (Vivian) Chen

<https://github.com/MiuLab/CQA-Study>



Conversational Question Answering

Passage:

Rawls derives two principles of justice from the original position. **The first of these is the Liberty Principle**, which **establishes equal basic liberties** for all citizens. 'Basic' liberty entails the freedoms of conscience, association and expression as well as democratic rights; ... Thus participants would be moved to affirm a two-part second principle comprising Fair Equality of Opportunity and the famous (and controversial) difference principle. This second principle ensures that ...

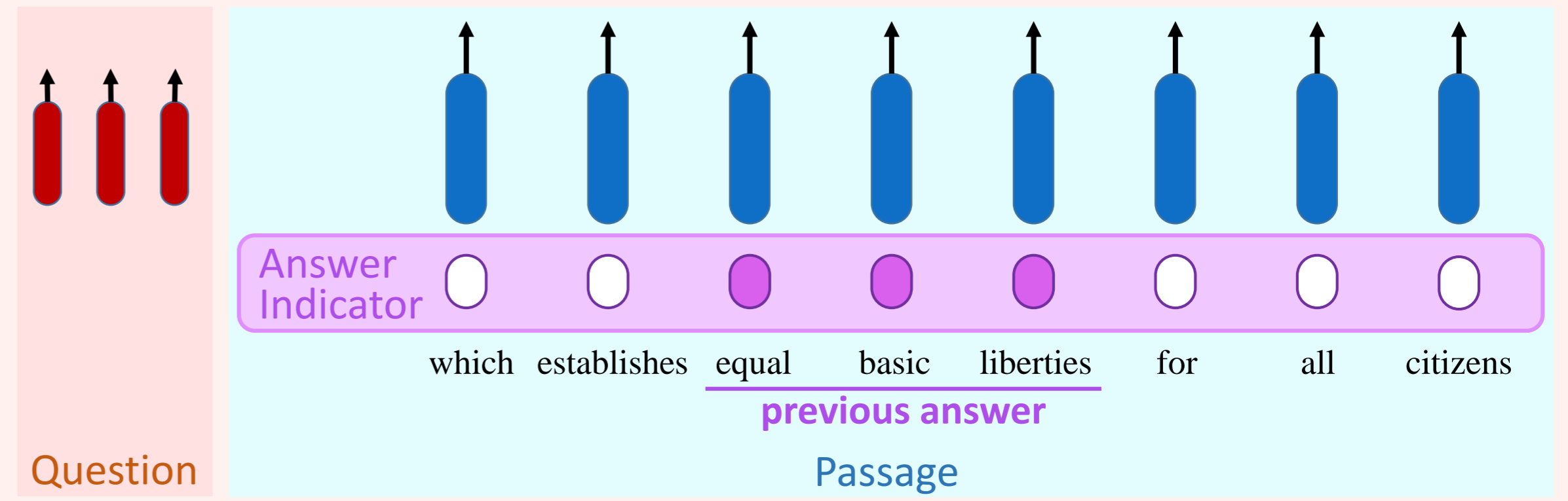
Q: What is the Principles of justice?
A: **The first of these is the Liberty Principle.**

Q: What is the Liberty Principle?
A: **establishes equal basic liberties for all citizens.**

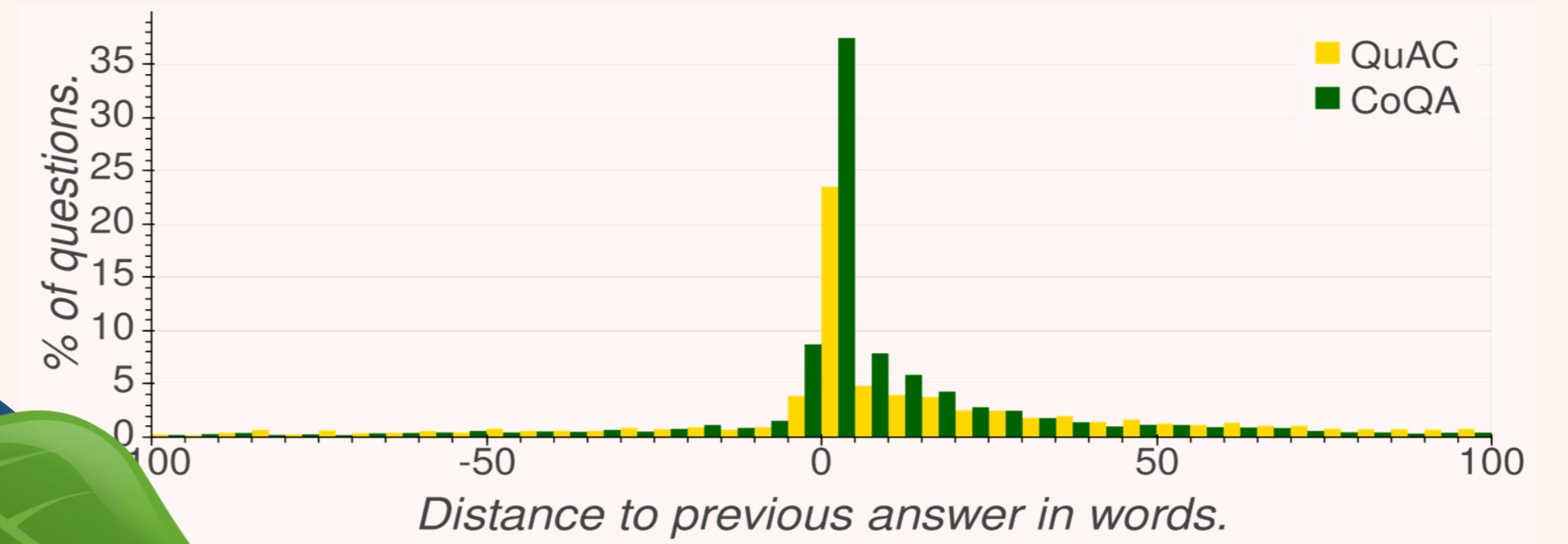
Conversation History

Q: What is **another** principle?

Observation 1: Way of Feeding in History



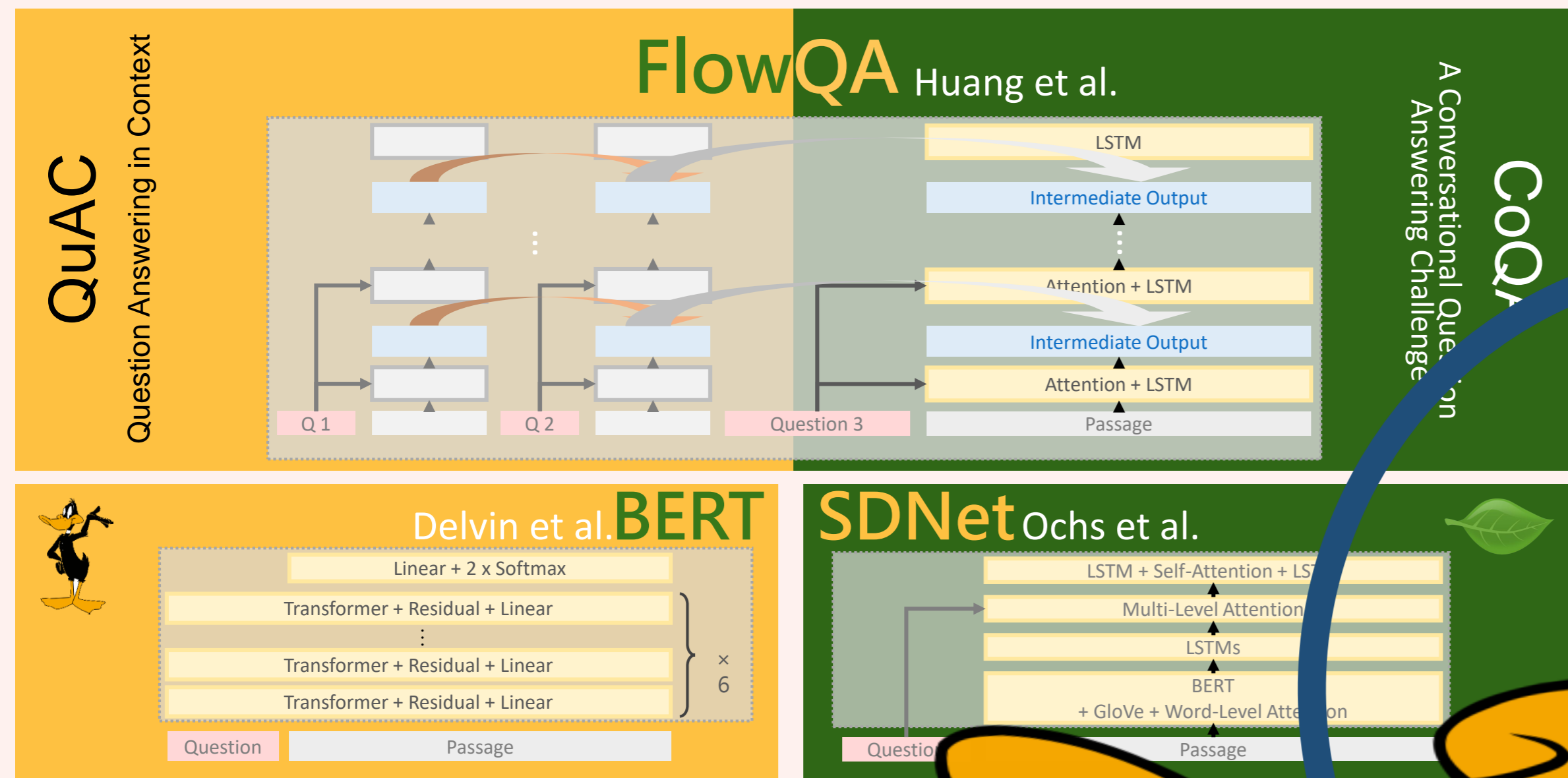
Observation 2: Short Distance between Answers



Example:

The first of these is the Liberty Principle, which establishes equal basic liberties for all citizens. 'Basic' liberty ..1 word

Datasets and Models Studied



Can QuAC & CoQA well reflect content understanding?

Do previous models understand the content of conversations?

Repeat Attack to Verify It

Increase the distance, but keep the semantics!

3 Training & Testing Settings to Verify It

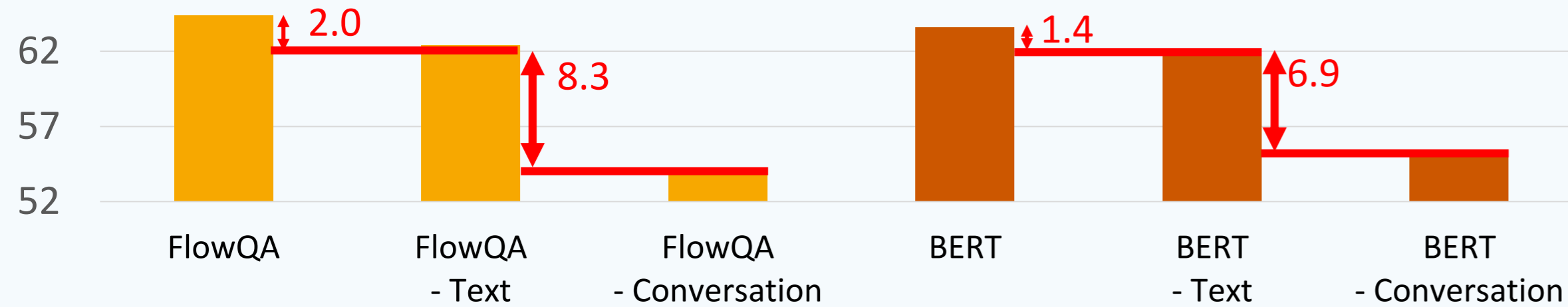
| Original: | Minus Text: | Minus Conversation: |
|---|--|---|
| <p>Passage: Rawls derives two principles of justice from the original position. The first of these is the Liberty Principle, which establishes equal basic liberties for all citizens.</p> <p>Q: What is the Principles ... ? A: The first of these is the ...</p> <p>Q: What is the Liberty ... ? A: establishes equal basic liberties for all citizens.</p> | <p>Passage: Rawls derives two principles of justice from the original position. mask mask which mask mask</p> <p>Q: What is the Principles ... ? A: The first of these is the ...</p> <p>Q: What is the Liberty ... ? A: establishes equal basic liberties for all citizens.</p> | <p>Passage: Rawls derives two principles of justice from the original position. The first of these is the Liberty Principle, which establishes equal basic liberties for all citizens.</p> <p>Q: What is the Principles ... ? A: The first of these is the ...</p> <p>Q: What is the Liberty ... ? A: establishes equal basic liberties for all citizens.</p> |

<Premise> Content understanding is necessary. → Minus Text ☹️

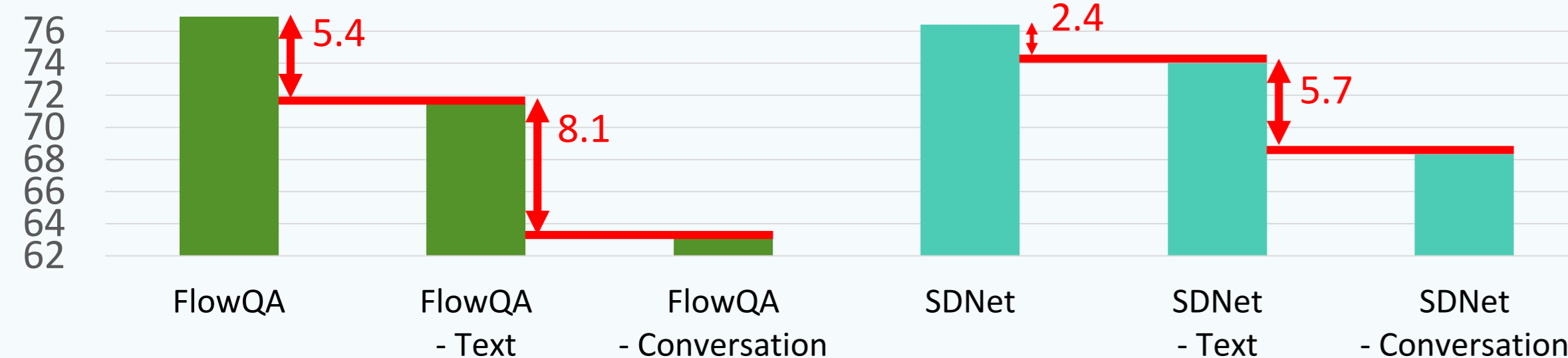
| Original: | Minus Text: | Minus Conversation: |
|--|--|--|
| <p>Passage: In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. The following year, he starred as James Gordon in Christopher Nolan's commercially and critically successful Batman Begins. ...</p> <p>Q: What was his resurgence or comeback role? A: In 2004, Old man returned to prominence when he landed a significant role ...</p> <p>Q: Are there any other interesting aspects about this article?</p> | <p>Passage: In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. The following year, he starred as James Gordon in Christopher Nolan's commercially and critically successful Batman Begins. ...</p> <p>Q: What was his resurgence or comeback role? A: In 2004, Old man returned to prominence when he landed a significant role ...</p> <p>Q: Are there any other interesting aspects about this article?</p> | <p>Passage: In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. In 2004, Old man returned to prominence when he landed a significant role in the Harry Potter film series, playing Harry Potter's godfather Sirius Black. The following year, he starred as James Gordon in Christopher Nolan's commercially and critically successful Batman Begins. ...</p> <p>Q: What was his resurgence or comeback role? A: In 2004, Old man returned to prominence when he landed a significant role ...</p> <p>Q: Are there any other interesting aspects about this article?</p> |

<Premise> Model understand the content well → 😊 even attacked

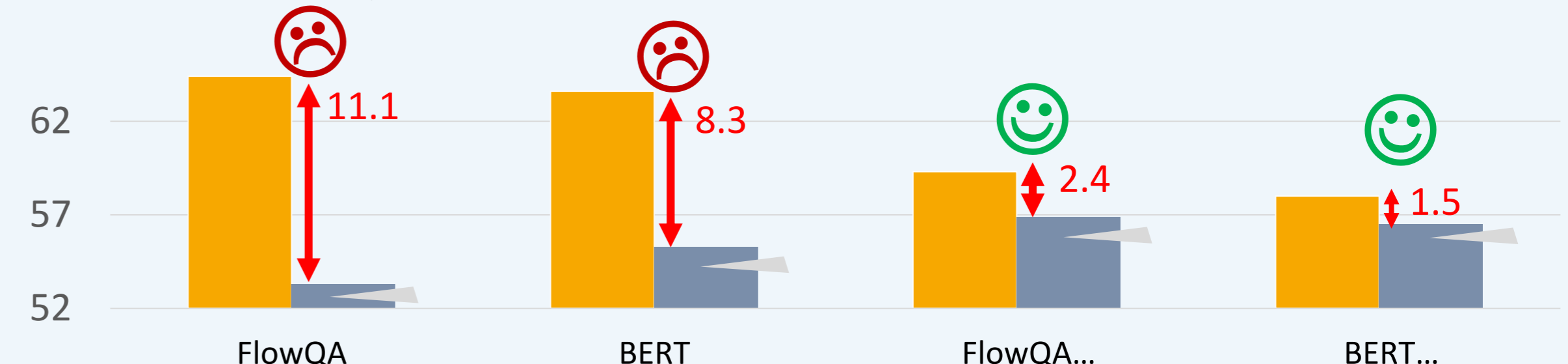
Results on QuAC



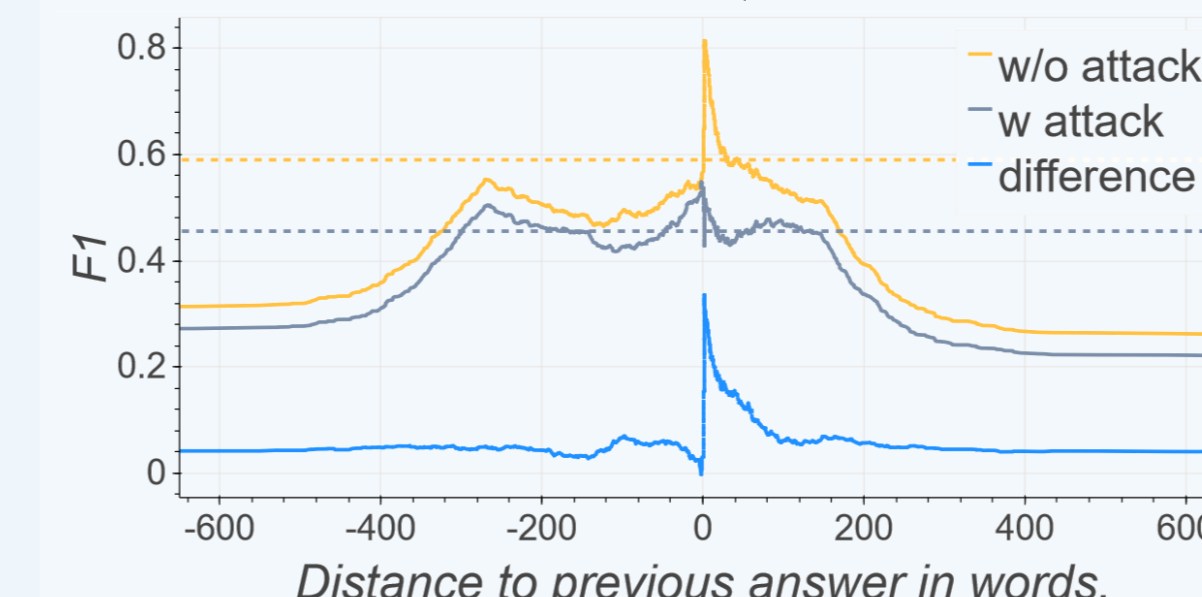
Results on CoQA



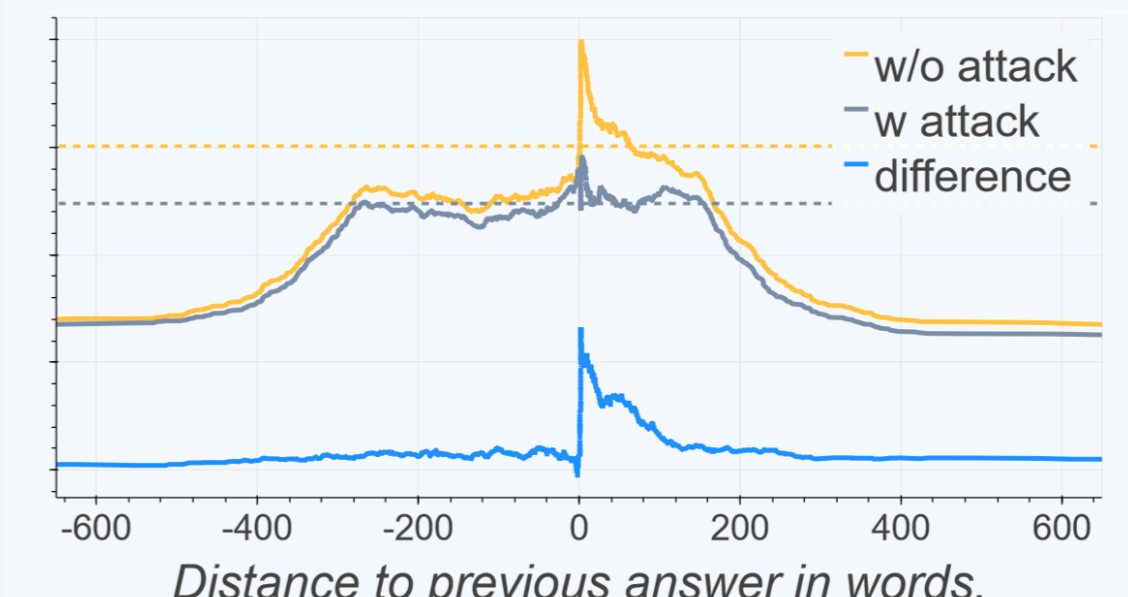
Results on QuAC



FlowQA



BERT



Conclusions

- Previous models **may not** understand the content of conversations.
- Content understanding is **not** well reflected by current metrics (e.g. F1).

